SLOVENSKI STANDARD
SIST EN 50239:2018

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Nadomešča:
SIST EN 50239:2001
SIST EN 50239:2001/AC:2012

Železniške naprave - Sistem radijskega daljinskega vodenja vlečnih vozil za ranžiranje prometa

Railway applications - Radio remote control system of traction vehicle for shunting traffic

Bahnanwendungen – Funkfernsteuerungssystem von Triebfahrzeugen für Rangierbetrieb

Applications ferroviaires - Système de radiocommande à distance des véhicules de traction pour application de manoeuvre

Ta slovenski standard je istoveten z: **EN 50239:2018**

ICS:

33.200	Daljinsko krmiljenje, daljinske meritve (telemetrija)	Telecontrol. Telemetering
45.060.10	Vlečna vozila	Tractive stock

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EUROPEAN STANDARD

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English Version

Railway applications - Radio remote control system of traction vehicle for shunting application

Applications ferroviaires - Système de radiocommande à distance des véhicules de traction pour application de manoeuvre

Bahnanwendungen - Funkfernsteuerung von Triebfahrzeugen für Rangierbetrieb

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European Committee for Electrotechnical Standardization
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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 50239:2018) has been prepared by CLC/SC 9XA “Communication, signalling, and processing systems” of CLC/TC 9X “Electrical and electronic applications for railways”.

This document supersedes EN 50239:1999.

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2018-11-27
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2020-11-27

The main changes with respect to EN 50239:1999 are listed below:

- contents related to Safety Integrity Level (SIL) have been deleted, in particular Annex A with all its examples of EN 50239:1999;
- the text of this European Standard is considering only shunting application;
- the title has been replaced by “Railway applications – Radio remote control system of traction vehicles for shunting application”.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Introduction

This European Standard is prompted to offer a minimum set of requirements for the application of remote control of traction vehicles by means of radio communication, operated by ground personnel during shunting.

The minimum set of requirements is considered with reference to the following aspects:

- operational requirements for the use of radio remote control system;
- functional requirements for the radio remote control system;
- technical requirements for the radio remote control system.

1 Scope

This European Standard contains the application requirements relevant to the radio remote control of a traction unit for shunting application, operated by personnel not physically located at the controls within the vehicle cab.

Requirements specification for radio means and wireless protocols, as well as requirements specification for wireless communication between elements of the train, are not covered by this standard.

This European Standard is applicable to newly manufactured vehicles and retrofitted vehicles.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1037, *Safety of machinery - Prevention of unexpected start-up*

EN 50121-3-2:2016, *Railway applications - Electromagnetic compatibility - Part 3-2: Rolling stock - Apparatus*

EN 50121-4:2016, *Railway applications - Electromagnetic compatibility - Part 4: Emission and immunity of the signalling and telecommunications apparatus*

EN 50125-1:2014, *Railway applications - Environmental conditions for equipment - Part 1: Rolling stock and on-board equipment*

EN 50126-1, *Railway Applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS) - Part 1: Generic RAMS Process*

EN 50128, *Railway applications - Communication, signalling and processing systems - Software for railway control and protection systems*

EN 50129, *Railway applications - Communication, signalling and processing systems - Safety related electronic systems for signalling*

EN 50155:2017, *Railway applications - Rolling stock - Electronic equipment*

EN 50159, *Railway applications - Communication, signalling and processing systems - Safety-related communication in transmission systems*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
addressing
set of rules that allows only the designated transmitter to address the corresponding receiver

3.2
command signal
signal from the transmitter or from the local control device to the traction vehicle to perform the specified task

3.3
direct acting brake
brake which uses directly controlled air pressure for creating braking effort, it means that by increasing the pressure in the brake pipe, the braking effort is increased, too

3.4
dynamic brake
brake in which the brake force is produced by the movement of the vehicle or its functional elements, but not involving friction

[SOURCE: EN 14478:2005, 4.6.2.1]

3.5
indirect acting brake
brake which uses indirectly controlled air pressure for creating braking effort

3.6
local control mode
operation of the traction vehicle by using local controls from within the vehicle cab by the operator

3.7
manual stop
function of the radio control remote system similar to the emergency stop on the traction vehicle

3.8
multiple use of radio frequency carrier system
system which allows with one radio frequency carrier, multiple transmission of messages in a network of several transmitters and receivers

3.9
operational condition
situation under which a system will satisfy a set of operational requirements

3.10
operator
person who drives a traction vehicle, either from aboard or by means of the radio remote control

3.11
operator vigilance device in remote control mode
device usually in the transmitter which monitors the vigilance of the operator in the radio control mode and initiates a stop signal if no command is given within a preset time

3.12
radio signal
information transmitted on a radio-frequency carrier

3.13
radio transmission path
path followed by radio signals between a transmitter and a receiver

3.14
receiver
part of the radio remote control system that converts transmitted radio signals into desired form of output signals

3.15
remote control mode
mode in which the traction vehicle is operated by the radio remote control system

3.16
shunting
moving vehicles for all purposes during the transportation other than arriving, departure and running

3.17
start-up
change from the rest to the motion of the traction vehicle

3.18
tilt switch device
safety device in the transmitter to initiate a stop signal to the receiver if the transmitter is inadvertently tilted for longer than a preset time

3.19
traction vehicle
rail guided motorized vehicle

3.20
traction vehicle control unit
device located on the traction vehicle to transform the output signals from the radio control receiver or from the local controls located on the traction vehicle into commands and control signals for valves and monitoring functions

3.21
transmitter
part of the radio remote control system that is used for converting operator given commands into radio transmission signals

4 The radio remote control system and its components

A radio remote control system has to comprise as a minimum:

- transmitter;
- receiver;
- remote control portable and/or stationary device ;
- remote control onboard device.

NOTE: For more details, refer to Figure A.1.

5 General operational requirements

5.1 The use of the radio remote control shall not reduce the safe and normal operational use of the traction vehicles.

5.2 If the traction vehicle operates in the radio remote control mode, all the command signals used in local control mode shall be ineffective except the emergency stop command. If required, the audible warning signal, sanding, application of brake, decrease of power and motor stop commands may also be effective in radio remote control mode.

5.3 The traction vehicle shall be equipped with an interlock feature to prevent simultaneous activation of the local control and radio remote control modes. Switching from local control mode to radio remote control mode, and vice versa, shall only be performed when the traction vehicle is at a standstill and the brake device activated to prevent train/vehicle from moving. The system design shall prevent switching from one to another mode in any other train configuration.

5.4 The radio remote control system shall prevent an inadvertent initiation/release of the automatic shunting coupling function. This shall be prevented by design and manufacture, e.g. applying two switches or a single switch with a releasable lock, etc.